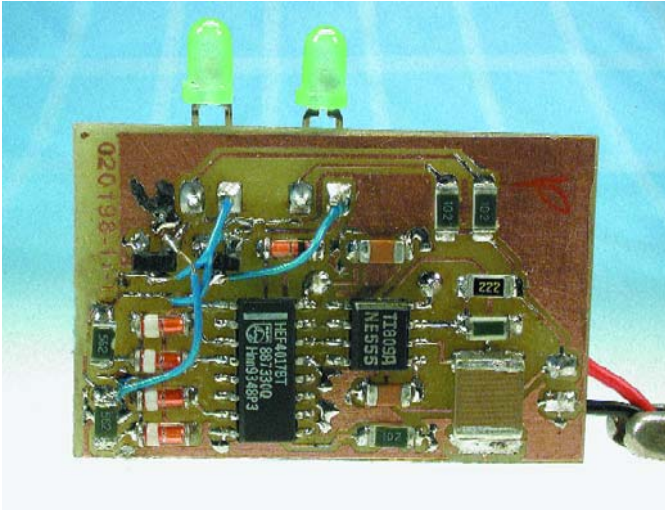


Alternating Blinker for Model Vehicles

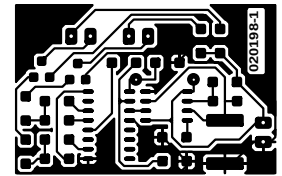
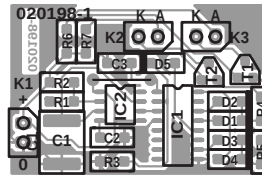


U. Neubert

This type of blinker is primarily used in model vehicles, where it can be used to achieve a realistic imitation of the dual flasher bar on an ambulance or fire engine. The LEDs, which are connected to the two open collectors, blink twice on the right and then twice on the left. The visual effect is simply fantastic. The electronics consists of a simple 555-based clock generator and a 4017 decimal counter. The 555 is wired as a free-running oscillator.

The timer output signal on pin 3 is fed to the Count input of the 4017, whose outputs go high sequentially. Each time an output goes high, the previous output goes low, as it should be with a decimal counter.

2



COMPONENTS LIST

(all parts SMD)

Resistors:

R1 = 2k Ω
R2 = 180k Ω
R3, R6, R7 = 1k Ω
R4, R5 = 5k Ω

Capacitors:

C1 = 1 μ F 16V
C2 = 10nF
C3 = 100nF

Semiconductors:

D1-D5 = BAS32
D6, D7 = LED, low current*
T1, T2 = BC847
IC1 = 4017T
IC2 = NE555

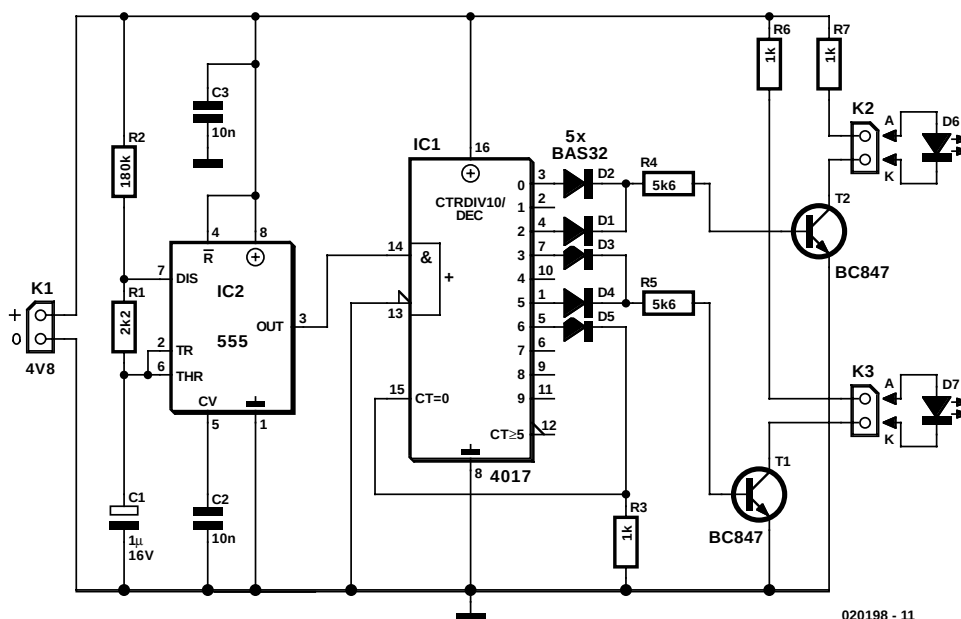
Miscellaneous:

K1 = supply connections

* not SMD, see text

The 'program' runs in six steps. In the first and third steps, T2 conducts, while in the fourth and sixth steps T1 conducts. Each time one of the transistors conducts, the connected LED flashes. On the second and fifth clock pulse, both transistors are switched off and the LEDs are dark. The leading edge of the seventh clock pulse resets the counter via Q6, and the cycle starts again from the beginning. Other blinking patterns can also be implemented using different logical-OR combinations of the IC outputs.

The open-collector outputs allow other loads, such as relays or incandescent lamps, to be connected in place of the LEDs. If this is done, R6 and R7 should be replaced by 0- Ω resistors or wire bridges. However, the load current should not exceed 300 mA. Circuit construction using the printed circuit board shown in **Figure 2** is not difficult, despite the use of SMD components, so it should work properly right from the start.



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